REMARKS

Claims 1-19 were pending in the application. In the Office Action dated February 2, 2004, Claim 15 was rejected under 35 U.S.C. § 102(b) as being anticipated by Hoffman et al. in U.S. Patent No. 3,832,581. Claims 1-5 and 11-14 were rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Obidniak in U.S. Patent No. 5,786,645. Claim 6 was rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Obidniak in further view of Hsu et al. in U.S. Patent 5,330,026. Claim 7 was rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Obidniak in further view of Kloosterhouse et al. in U.S. Patent 5,191,255. Claims 8-10 were rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman, Obidniak, and Kloosterhouse in further view of Horwinski in U.S. Patent 4,042,056. Claims 16 and 17 were rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Porter in U.S. Patent 5,179,307. Claims 18 and 19 were rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Porter in further view of Shkondin in U.S. Patent 5,164,623. Further, the claim of priority was objected to as not citing the correct application number and not specifying the current status of the priority application. Also, drawings were objected to as not showing uniform polarity of permanent magnets and for ambiguous use of reference number 14.

The first paragraph of the RELATED APPLICATIONS section has been amended to correctly show the correct serial number of the priority application and its status.

The first two paragraphs of the DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS section have been amended to change the reference number of a bearing assembly from 14 to 16 in two places. The remainder of the uses in the specification of reference number 14 are to an axle.

FIG. 1 has been amended to show an example of uniform magnetic polarity in a given circular array of permanent magnets. This is equivalent to "*These permanent magnets are arranged on the flywheel such that all magnets in a ring on a given face have the same polarity (i.e., they are all either north or south poles)*" in the Summary on page 5 of the specification, as filed, as well as on page 12, lines 13-20 of the specification. No new matter has been introduced.

The three independent claims, 1, 15, and 16 have been amended to limit these claims to permanent magnets being arranged or mounted with uniform polarity within a given circular array of permanent magnets, instead of the mixed

or alternating polarity found in the prior art. Also, flywheel rotation is induced entirely by magnetic repulsion, instead of a combination of magnetic attraction and repulsion, as found in the prior art.

Claim 15 was rejected under 35 U.S.C. § 102(b) as being anticipated by Hoffman et al. in U.S. Patent No. 3,832,581. However, the permanent magnets in Hoffman are arranged in alternating polarity in each circular array thereof (see Ref# 38 in FIG. 2, also col. 3 lines 29-33). Further, the Hoffman flywheel rotates through alternating polarity of the electromagnets caused by alternating current (col. 4, lines 25-38). By necessity, this implies that both magnetic attraction and repulsion are being utilized to cause rotation of the flywheel. Thus, both the limitation of the permanent magnets in a given circular array being mounted with uniform polarity and the exclusive use of magnetic repulsion are missing in the Hoffman reference. As these limitations in Claim 15 are missing in the cited reference, Applicant respectfully suggests that the rejection under 35 U.S.C. § 102(b) is not proper and respectfully requests that this rejection be withdrawn.

Claims 1-5 and 11-14 were rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Obidniak in U.S. Patent No. 5,786,645. It was suggested that "it would have been obvious ... to construct the motor of Hoffman with the magnets having the same polarity to provide an efficient machine as a motor and a generator". However, Hoffman is an AC motor utilizing both magnetic attraction and repulsion to cause rotation, whereas the present invention is a DC motor utilizing only magnetic repulsion. In Hoffman, the magnetic polarity of the electromagnets periodically reverse in response to AC voltage reversals (See col. 4, lines 25-36). Thus, Hoffman alternates polarities in each circular array of permanent magnets and alternates polarity of the driving electromagnets. Both magnetic attraction and repulsion are by necessity present. The Obidniak motor/generator also utilizes alternating magnetic attraction and repulsion (see FIGs. 4, 5, 7, col. 1 lines 35-46, col. 2 lines 63-67, col. 3 lines 1-14, col. 3 lines 32-36, col. 4 lines 27-33, and claim 1).

It should be noted that it is an incorrect characterization of Obidniak that it teaches "*electromagnets energized by high energy, short burst DC pulses by a DC capacitance discharge and controller where the controller determines the torque/speed by the amount of current provided for repulsion of magnet 2*".

Rather, as noted above, the Obidniak motor/generator operates primarily utilizing magnetic attraction, with repulsion also utilized to improve efficiency.

First, the Hoffman invention is a different art than the present invention as it is an AC motor, instead of a DC motor/generator. Secondly, there was no incentive given for combining the two references. There is nothing in either reference that would suggest that combining the two references would provide a more efficient motor/generator. Indeed, since Hoffman is an AC motor, the art would appear to teach away from combining the two references, since the Obidniak modifications to a Hoffman AC motor are likely to make such a motor less efficient, instead of more. Indeed, mounting permanent magnets with uniform polarity in an AC motor, such as disclosed by Hoffman, is likely to make it significantly less efficient. That is why of course Hoffman alternates polarity.

Additionally, neither reference teaches "*a controller/sequencer adapted to selectively apply DC power to said electromagnets of said first group of electromagnets and said second group of electromagnets to induce a rotation of said flywheel selectively at variable torques and speeds in at least a first direction of rotation entirely through repulsion of the first group of permanent magnets by the first group of electromagnets and repulsion of the second group of permanent magnets by the second group of electromagnets*". Hoffman does not teach a controller/sequencer adopted to selectively apply DC power, as it utilizes AC power. It does not operate "*entirely through repulsion of the first group of permanent magnets by the first group of electromagnets and repulsion of the second group of permanent magnets by the second group of electromagnets*" since it utilizes both magnetic attraction and repulsion. Obidniak does not strictly apply DC power to the electromagnets, since it essentially converts DC to AC power through use of capacitors, etc. and then applies the equivalent of AC power to the electromagnets, causing them to reverse polarity, as is done by applying AC power to such in Hoffman. Secondly, Obidniak also teaches utilization of both magnetic attraction and repulsion, as did Hoffman, instead of being limited to magnetic repulsion to cause rotation of the flywheel, as is claimed.

Thus, applicant respectfully submits that a prima facie case of obviousness was not made, or if made, has been overcome. There are limitations in the pending claims missing from both of the cited references. There is no motivation for combining references. The references teach away from being combined, as a combination would decrease efficiency. Applicant respectfully requests that the

rejection of these claims as obvious under 35 U.S.C. § 103 has been overcome and respectfully requests that this rejection be withdrawn.

Claim 6 was rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Obidniak in further view of Hsu et al. in U.S. Patent 5,330,026. Claim 6 is indirectly dependant upon claim 1, which should be allowable, and since this claim adds limitations to an allowable claim, should also be allowable. Further, the bearings 71 in the Hsu reference is located on the inside of two wheels or rollers 7 driven by sun 61 and planetary 62 gears by an electrical motor 5 located between the rollers 7. There is no flywheel present in the invention. The bearing in the present invention couples the flywheel to the axle (see claims 1, 2, and 5, upon which claim 6 is dependent). There is nothing in Hsu teaching or suggesting that a one way bearing be utilized "*coupling said flywheel to said axle*" since there is no flywheel, or even an equivalent thereof, shown, suggested, or taught, in the Hsu reference. The Hsu one-way bearing and its usage is significantly different from that utilized in the present invention. Therefore, it is inappropriate to combine this reference with the other two cited references. Rather, a prima facie case of obviousness has not been shown. Applicant therefore respectfully requests that the rejection of these claims as obvious under 35 U.S.C. § 103 has been overcome and respectfully requests that this rejection be withdrawn.

Claim 7 was rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Obidniak in further view of Kloosterhouse et al. in U.S. Patent 5,191,255. Claim 7 is indirectly dependant upon claim 1, which should be allowable, and since this claim adds limitations to an allowable claim, should also be allowable. Kloosterhouse further does not utilize a circular array of permanent magnets, as claimed, but rather a octagonal (FIG. 2,3) or hexagonal (FIG. 12) pattern (col. 2, lines 18-24. Also, it utilizes magnets with alternating magnetic polarity (FIG. 9) and both magnetic attraction and repulsion (col. 2, line 54-55). Since none of the cited references teaches, shows, or suggests elements in the rejected claim, a prima facie case of obviousness has been overcome. Applicant therefore respectfully requests that the rejection of this claim as obvious under 35 U.S.C. § 103 has been overcome and respectfully requests that this rejection be withdrawn.

Claims 8-10 were rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman, Obidniak, and Kloosterhouse in further view of Horwinski in U.S. Patent 4,042,056. Claims 8-10 are indirectly dependant upon claim 1, which should be allowable, and since this claim adds limitations to an allowable claim, should also be allowable. Further, the necessity of combining four reference is strong indicia of nonobviousness. Second, Horwinski teaches a hybrid vehicle, which is a dissimilar art, and thus cannot be combined with the other three references to find obviousness. Third, there is no teaching, suggestion, or mention in Horwinski of elements such as those discussed above for claim 1. Fourth, there is no mention or teaching in Horwinski of "*disconnecting power to said electromagnets of said first group and said second group of electromagnets*" or "*thereby establishing a coast mode of operation*", as claimed. Since none of the cited references teaches, shows, or suggests elements in the rejected claims, plus the presence of strong indicia of nonobviousness, a prima facie case of obviousness has been overcome. Applicant therefore respectfully requests that the rejection of these claims as obvious under 35 U.S.C. § 103 has been overcome and respectfully requests that this rejection be withdrawn.

Claims 16 and 17 were rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Porter in U.S. Patent 5,179,307. First, that both the Hoffman and Porter references utilize permanent magnets mounted in a concentric circle in a pattern of alternating polarity (see Hoffman FIG. 2, Porter FIG. 1), instead of "*mounted with a ... uniform polarity*", as claimed. Secondly, both references utilize alternating current, instead of direct current. By their very nature, both utilize both magnetic attraction and repulsion, instead of "*utilizing selective magnetic repulsion*" as claimed. Since neither cited reference teaches, shows, or suggests elements in the rejected claims, a prima facie case of obviousness has been overcome. Applicant therefore respectfully requests that the rejection of these claims as obvious under 35 U.S.C. § 103 has been overcome and respectfully requests that this rejection be withdrawn.

Claims 18 and 19 were rejected under 35 U.S.C. § 103 as being obvious in view of Hoffman and Porter in further view of Shkondin in U.S. Patent 5,164,623. Claims 18 and 19 are indirectly dependant upon claim 16, which should be allowable, and since these claims add limitations to an allowable claim, they should also be allowable. The Shkondin reference also utilizes permanent magnets

of alternating polarity (col. 3 lines 3-7, 19-20; col. 6, lines 3-6, 49-50; col. 8, lines 18-20), and by its nature utilizes both magnetic attraction and repulsion, in contrast to the claimed uniform polarity and use of magnetic repulsion alone. Also, the Shkondin reference does not explicitly utilize "*recapture of inertial energy from said flywheel*", but rather "*does not call for special braking since rotor electromagnet cores are attached by the stator magnets when the electromagnets are deenergized and tend to take s steadily fixed position*". Further, as to claim 19, there is no mention in the Shkondin reference to "*the direction of travel of said vehicle [being] at least partially determined by selective control of each of said two radial/rotary propulsion systems under the control of said controller/sequencer*", as claimed. Indeed, there is no mention, suggestion, or teaching whatsoever in the Shkondin reference of "*steering*" whatsoever. Since none of the cited references teaches, shows, or suggests elements in the rejected claims, a prima facie case of obviousness has been overcome. Applicant therefore respectfully requests that the rejection of these claims as obvious under 35 U.S.C. § 103 has been overcome and respectfully requests that this rejection be withdrawn.

Applicants respectfully requests that this Amendment be entered. All claims should be allowable. Applicants further respectfully requests that a timely Notice of Allowance be issued in this case.

Date: June 25, 2004

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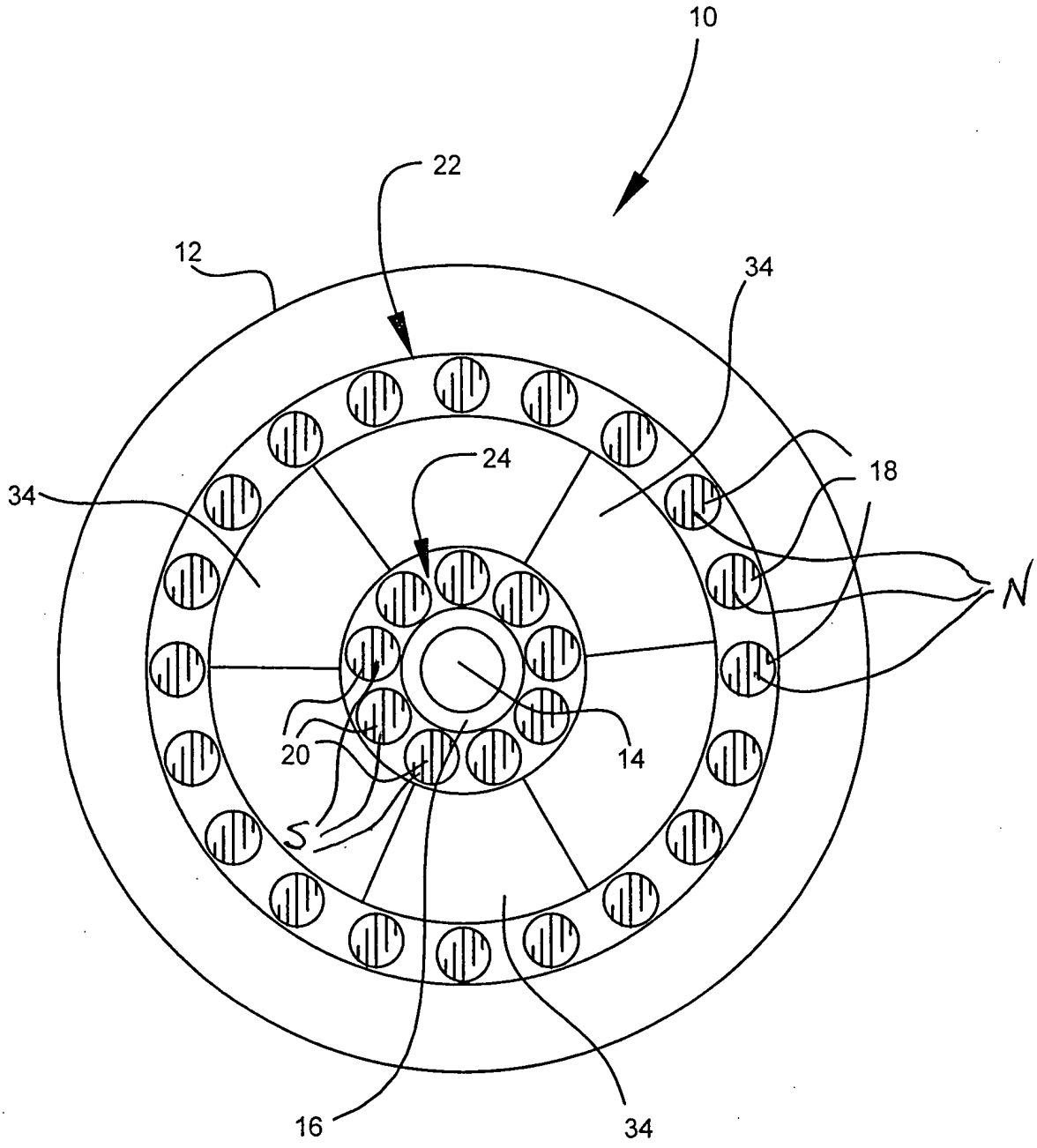

FIG. 1